USDA Wildlife Services Image Collection: Creating an Online Database of Digital Images Using CONTENTdm™ Software

Diana L. Dwyer
USDA APHIS Wildlife Services, National Wildlife Research Center, Fort Collins, Colorado

ABSTRACT: Photographic images are valuable assets in wildlife damage management research. Photographs are used in presentations, publications, websites, and posters to illustrate damage problems, the species involved, and management solutions. However, organizing photographic collections is time consuming, requires special storage, and locating individual images becomes difficult as collections grow. This article demonstrates the USDA Wildlife Services Image Collection Database and describes the steps taken in creating the database, scanning the images, developing a controlled vocabulary and metadata, and Internet search screens. The database allows users to search by keyword, display search results, and download selected images directly into PowerPoint to create presentations. Plans for future additions to the database are also discussed, and recommendations on organizing individual image collections are listed.

KEY WORDS: CONTENTdm™ software, digital image collections, image databases, photographs

INTRODUCTION

For thousands of years, people have used images to inform, educate, illustrate a point, or enhance a presentation or display (Thomas 2001). With the widespread use of personal cameras, millions of photographs are taken every month, although many of them do end up in landfills (Viskochil 2003). Digital cameras have made it especially easy to take photos in the field, download them to a computer, and easily produce a presentation for a meeting or class. This is particularly true in the scientific community, where images are an important tool in highlighting research and documenting the research effort. Unfortunately, having so many photographs can quickly become a problem when the number of images increases and it becomes difficult to organize, locate, and store them.

The Information Services Unit (ISU) at the USDA National Wildlife Research Center (NWRC) in Fort Collins, CO, has been collecting images for many years that illustrate the work of the NWRC and Wildlife Services (WS). Images were sent to the Unit for use in publications, given as donations by retirees, and were obtained by the staff for use in displays and presentations. The collection has grown sporadically and there has been some attempt to organize some of the photos into broad subject categories and store them in archival binders and slide boxes. But most of the photos are located in scattered locations, many duplicates exist, and some of the photos are of poor quality and should be weeded out. ISU staff members spend hours looking for photos, often repeating the same search for different requests within a short time period. The images are also in multiple formats, including 35-mm slides, color and black and white photographs, negatives, digital images, and glass plates, which all require their own unique processing and storage. Problems with deterioration and inadequate storage for preserving the images are also issues that needed to be addressed.

In 2001, the decision was made to create a digital database of the existing images in the NWRC collection for WS. Advances in technology and the widespread use of the Internet to deliver information had made the use of digital rather than original images more acceptable to users and institutions in the government, and academia had begun digitizing their collections (Kenney and Rieger 2000). Examples of public image databases in the natural resources area are the U.S. Fish and Wildlife National Image Library (http://images.fws.gov), the USDA Agricultural Research Service Image Gallery (http://www.ars.usda.gov/is/graphics/photos), and the Forestry Images Database http://www.forestryimages.org/search/index.cfm). ISU wanted to create a similar database for WS staff to access and to archive images that illustrate the work of the program. This article describes the creation of an in-house image database, the project goals, what steps we followed, and our future plans for the collection. Examples of screen shots of the database are also shown.

PROJECT GOALS

The main project goals included the following:

Create a Searchable, Internet Accessible Database

We wanted users to be able to search for images from several access points including subject terms, creator or photographer, by species, or by location. Our users were spread across the country in field stations and state offices, so access through the Internet was the most flexible way to deliver the information.

Select the Best Images that Highlight WS Work

We did not want to collect and digitize everything we had, but rather the best photos we could find that highlight the research and field work being done by WS. We visualize this database as a core collection on wildlife damage management and damage situations.

Make Images Available to WS Staff in Multiple Formats

Digital images are usually scanned at a much lower resolution for viewing on a computer screen. However,

these lower resolution images can not be used effectively in print. It was important to have an archived high quality copy of the image in either the original format like a 35-mm slide or a scanned image at 1200 dpi in a TIFF format.

Standardized Key Words

It was important to use terms that were familiar to the wildlife damage management community and be consistent in cataloging each image. Images were cataloged using a subject authority list of terms used by the NWRC Library in cataloging books, reprints, and other publications into the NWRC online catalog. A standardized approach in how species names, personal names, and geographic locations were entered helped in locating the images after they were entered into the database.

Archive Original Images

Some of the image collections are deteriorating, and it is important that they are properly labeled and stored in archival slide holders and folders.

PROJECT DESCRIPTION

The core collection was created from 3,000 images scanned using the Kodak Photo CD Master format, which stores data at five levels of resolution. This provided us with high-quality scans of all of the images in TIFF format, an access level image at 72 dpi, and a thumbnail image. An ACCESS™ database was created with thumbnail images and a basic search screen for search for images by author, title, and keyword. The Colorado Digitization Project's 'Western States Digital Imaging Best Practices Standards' (2003; http://www.cdpheritage .org/resource/index.html) were followed in creating the metadata or indexing fields used in the database.

A great deal of time was spent weeding out duplicate images and identifying the images. This was a significant problem, since some of the images had been scanned from photos in books or borrowed from other people's collections. When the origin of the original image became lost, a concern about copyright made it important that each image be identified as a USDA photo that we could include in the database. ISU staff contacted WS biologists, support staff, and retirees to gather as much information as possible about each of the images. It's estimated that ¾ of the time in creating a digital collection is spent on the metadata gathering and data entry, which proved to be the case in organizing this collection. The ACCESS database and images were copied onto 19 CDROMs and copies of the collection were sent to each WS state office and field station. An additional CDROM with brown treesnake images was added to the collection several months later. The database could be searched from a desktop, but the user was required to load each individual CDROM to see the actual full image. It became clear that software was needed that would allow easier manipulation of the images and with a more powerful search engine. After evaluating several digital image database software packages, NWRC purchased CONTENTdm™ image software (http://contentdm.com) by DiMeMa, Inc. CONTENTdm is a digital collection

management package that can be used to index images, documents, PDFs, video, and audio files. The software was loaded onto the APHIS intranet server, and the initial design of the database web pages was completed. The core collection was imported into the CONTENTdm software and several tweaks on the software were made to create the final database.

DATABASE FEATURES

The main page of the database (Figure 1) has a simple interface with choices for entering a quick keyword search and links to browse the entire collection, the advanced search screen, the 'my favorites' page, and a help screen. The toolbar along the top of the screen is the same on each page within the website, to provide consistency. There are also links to a description of the collection, copyright instructions, and a list of other wildlife image collections.

The 'browse' page (Figure 2) allows users to page through each image in the collection in either a thumbnail (shown) view or grid format. A truncated title is shown under each thumbnail view. The user can click on any thumbnail image and display the full image and metadata. Displaying the full image (Figure 3) will present a larger view of the image and a short metadata list. Any of the highlighted terms in the subject field may search for material similar to the image shown. The user can download the photo directly to the desktop or save it in a file for later use.

The 'advanced search' screen (Figure 4) allows the user to do more complicated searches by combining search terms in different fields like the title, creator, or subject. Drop-down boxes are available to see the entire list of terms used to catalog each image. The 'search results' page (Figure 5), shown here in the grid format, displays the thumbnail shot of each image found, the full title, subject terms, and the content description. A checkbox on the left of each image can be marked for creating a custom list of images. These can be downloaded or saved to the 'my favorites' page.

The 'my favorites' page (Figure 6) is where the user can create subject folders of images, run a slide show feature of saved images, or create an html page. Images saved here can also be downloaded directly into Power-Point to create presentations (Figure 7). Each image can be copied onto a slide with the title and metadata, or alone (Figure 8). The user can then manipulate the image and add text and background style sheets to the presentation.

FUTURE PLANS

Our future plans include completing an inventory of all the images we own that are not digitized, and then sort them according to priority levels. Our first priority will be to add images that highlight the current NWRC research projects and other work being done by WS staff, such as endangered species protection, wildlife diseases, and damage situations. The historical and international work will be done as time allows. A list of recommendations on the best use of digital cameras for field use and directions on how to submit photos to the collection will also be created for WS staff. A public access database of images will also be created when funds become available.
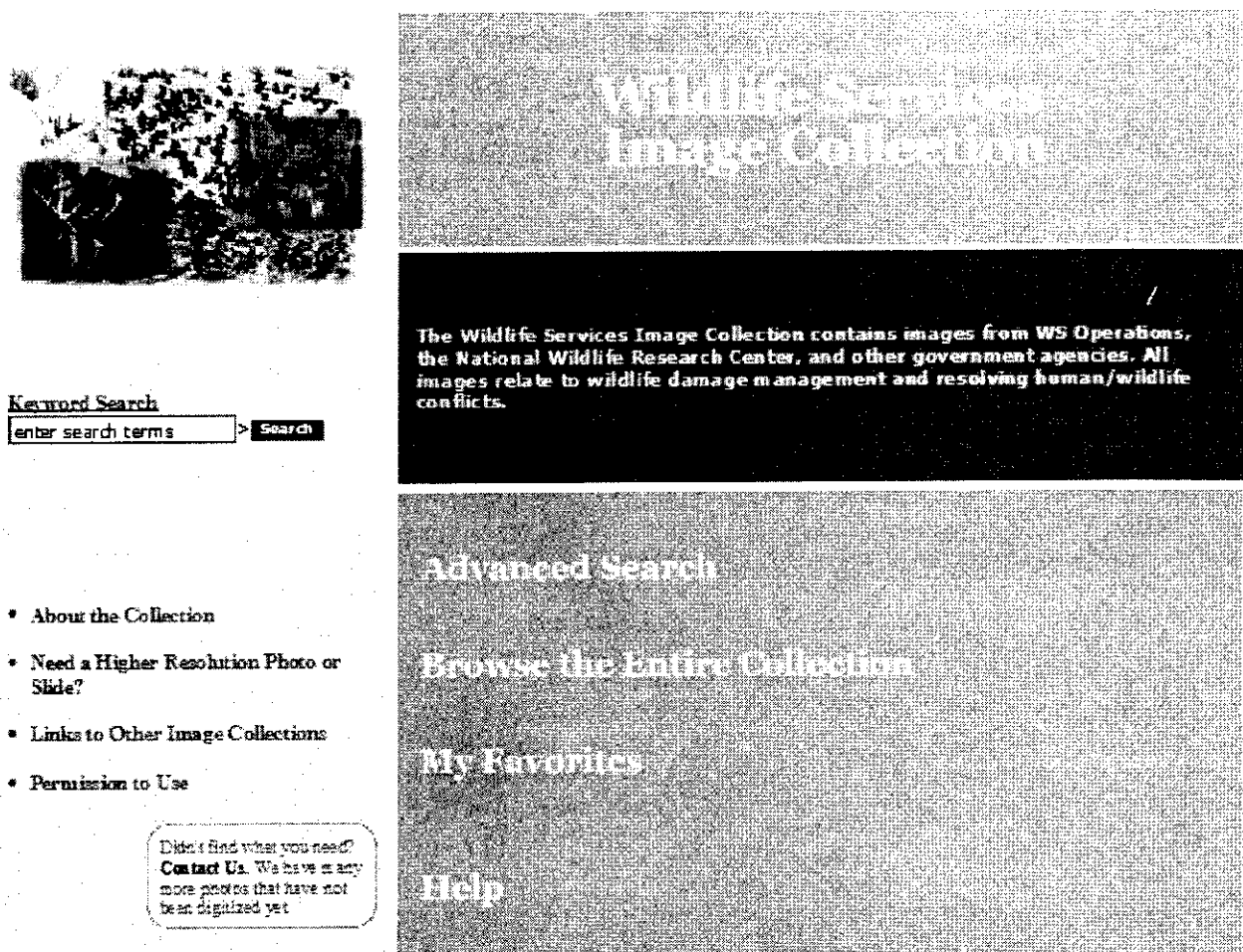
Figure 1. Wildlife Services Image Collection home page (http://wsimagee.aphis.usda.gov).

Figure 2. Browse page.

Wildlife Services Image Collection

back to search results   add to favorites

[Lone deer in a grassy area.]

File ID No.:	1762
Title:	[Lone deer in a grassy area.]
Subject:	Mammals
	Deer
Digital Image No.:	4579-024
Date Created:	unknown
Content Description:	Lone deer in a grassy area.
Publisher:	USDA-APHIS
Creator:	unknown
Format (creation-access):	Access, 1536x1024 pixels 72 dpi JPEG, file size ~4.6MB

add to favorites

Figure 3. Display image.

Wildlife Services Image Collection

Home | Browse the Entire Collection | Advanced Search | About the Collection | My Favorites | Technical Information | Help

Search: Across all fields | **Selected fields**

Find results with:

| All of the words ▾ | [   ] in the | Title ▾ | field | show terms |
| The exact phrase ▾ | [   ] in the | Subject ▾ | field | show terms |

+ more fields | - fewer fields

Search **clear**

Select available collections:

☑ Wildlife Services Image Collection   ☐ International Programs Images

☐ Historic Images

select all **clear all**

Contact Us | powered by CONTENTdm   ^ to top ^

Figure 4. Advanced search.

Wildlife Services Image Collection

Home | Browse the Entire Collection | Advanced Search | About the Collection | My Favorites | Technical Information | Help

Search Results: Your search retrieved 3 matching item(s). Select an item below for viewing.

| **search again** | | View: | **thumbnails** | **bibliographic** | **titles** |

No:	Image:	Title:	Subject:	Content Description:
☐ 1.		[Akbash and Great Pyrenees guard dogs watching over a flock of sheep.]	Tools; Guard Dogs; Mammals; Great Pyrenees; Akbash; Sheep; Livestock; Mountains	Akbash and Great Pyrenees guard dogs watching over a flock of sheep. Mountains in the distance.
☐ 2.		Feeding time 400+ ewe lambs, Kodiak, G. Pyr, S mon, Kenya 7 m. female Akbash	Tools; Guard Dogs; Mammals; Great Pyrenees; Akbash; Sheep; Livestock	Akbash and Great Pyrenees guards dogs watching over a flock of sheep.
☐ 3.		Feeding time 400+ ewe lambs, Kodiak, G. Pyr, S mon, Kenya 7 m. female Akbash	Tools; Guard Dogs; Mammals; Great Pyrenees; Akbash; Sheep; Livestock	Akbash and Great Pyrenees guards dogs watching over a flock of sheep.

select all **clear all** **add to favorites**   **prev page** **next page** 1 of 1

Contact Us | powered by CONTENTdm   ^ to top ^

Figure 5. Search results.

My Favorites

Compare, remove, move or create your own personal page below.
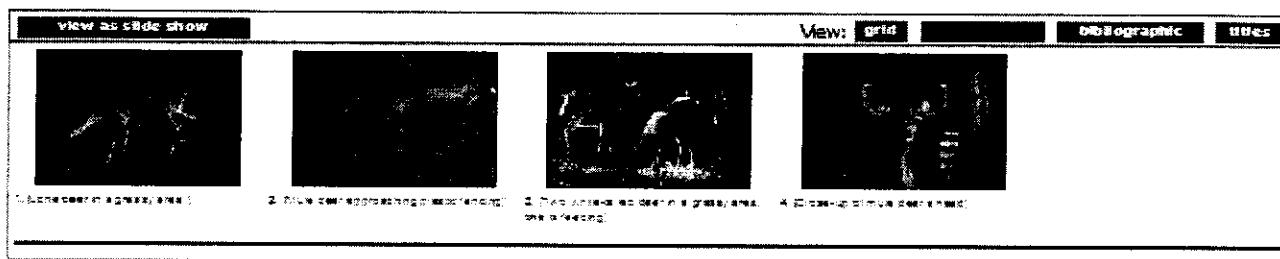
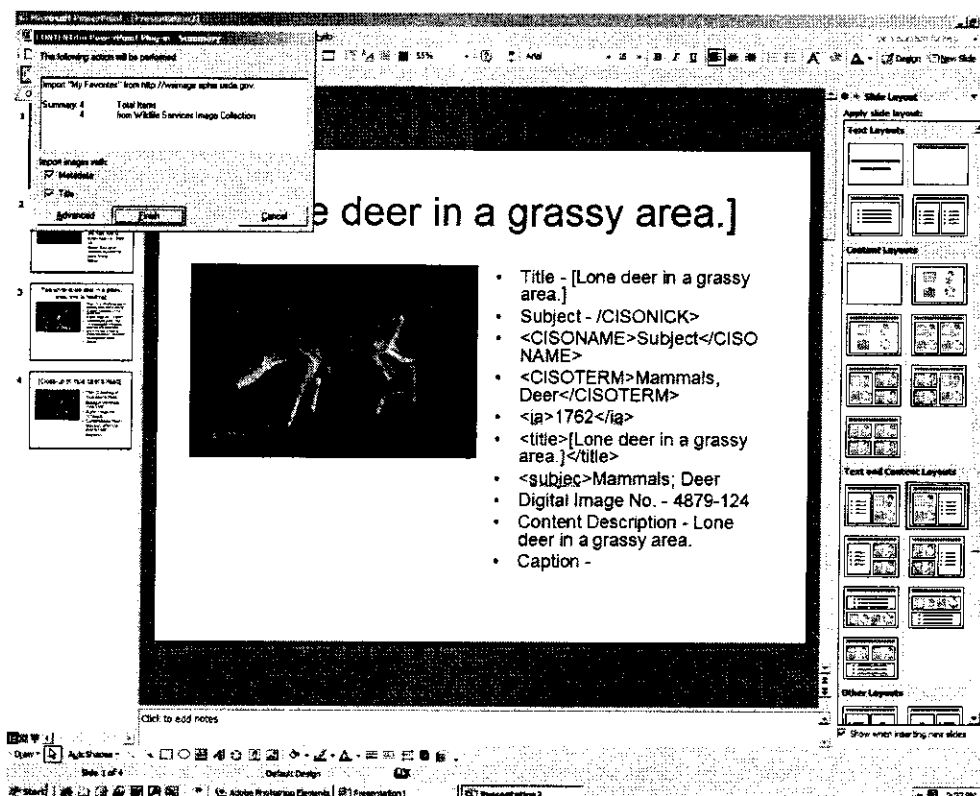**Figure 6. My favorites.**

Figure 7. Powerpoint download.

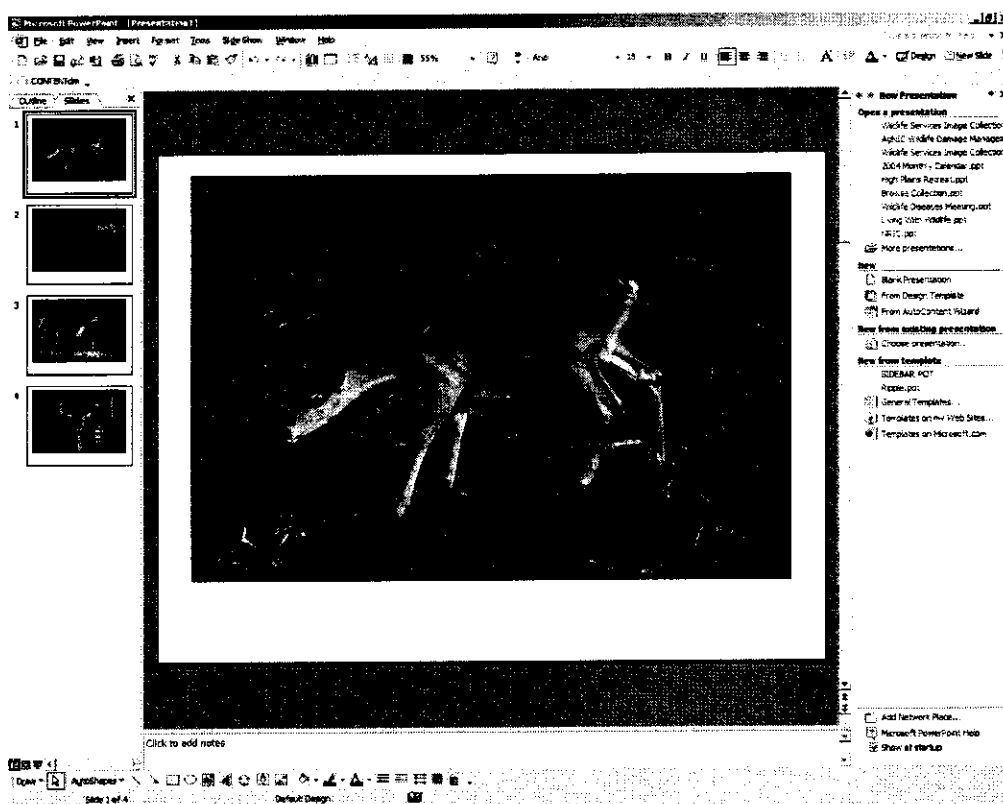**Figure 8. Powerpoint presentation.**

Image galleries of damage images are currently available on the NWRC website (http://www.aphis.usda.gov/ws/nwrc) and the AgNIC Wildlife Damage Management website (http://manta.colostate.edu/research/agnic).

QUESTIONS TO ASK BEFORE YOU BEGIN A DIGITAL IMAGE PROJECT

Quite often, people buy a scanner and then decide that they want to create a digital collection, but there are many questions you should ask before jumping into a digital image project. Below is a list taken from the Colorado Digitization Project website (http://www.cdpheritage.org/resource/introduction/questions.html). Another excellent source for information on digital processing, indexing, archiving images, and scanner selection and use can be found on the Washington State Library's Digital Best Practices website http://digitalwa.statelib.wa.gov/best.htm. The site walks you through the entire process of planning and doing digital projects.

Questions to Ask Before Starting a Digitization Project (CDP 2004)

Who is your audience?
What are the physical characteristics of the collection? Who owns it?
What is your timeframe?
How is the project funded?
Who will be responsible at different stages of the project?

How will you perform the actual digitization?
What metadata (indexing) scheme are you planning to use?
How are you going to provide access to the collection?
How do you plan to maintain the collection in the future?

LITERATURE CITED

BESSER, H., AND J. TRANT. 2003. Introduction to imaging: issues in constructing an image database. Getty Research Institute, Los Angeles, CA. 80 pp.

COLORADO DIGITIZATION PROGRAM. 2003. Western States Digital Imaging Best Practices Standards. CDP, Denver, CO. 41 pp.

KENNEY, A. R., AND O. Y. RIEGER. 2000. Moving theory into practice: digital imaging for libraries and archives. Research Libraries Group, Mountain View, CA. 189 pp.

TECHNICAL ADVISORY SERVICE FOR IMAGES. [website] http://www.tasi.ac.uk.

THOMAS, R. 2001. Finding images on the web. [website] Boston University Libraries, http://www.bu.edu/library/instruction/findimages/intro.html.

VISKOCHIL, L. A. 2003. Teaching history with photographs [website] http://www.lib.niu.edu/ipo/iht529846.html (accessed 8 Aug. 2004).

WASHINGTON STATE LIBRARY. Digital Best Practices. [website] http://digitalwa.statelib.wa.gov/best.htm.